Claims

1. A metallic object comprising a coating that is comprised of a thin metal oxide layer and nucleic acids and/or nucleic acid derivatives, characterized in that 5'-terminal or 3'-terminal molecule areas of the nucleic acids are incorporated stably into the metal oxide layer.

2. The object according to claim 1, characterized in that the unincorporated areas of the nucleic acids and/or nucleic acid derivatives are freely accessible to a large extent for subsequent interactions with other molecules.

3. The object according to claim 1 or 2, characterized in that the incorporated 5'-terminal or 3'-terminal areas of the nucleic acids and/or nucleic acid derivatives have inorganic groups.

4. The object according to claim 3, characterized in that the inorganic groups are phosphate or phosphonate or sulfonate groups.

5. The object according to one of the claims 1 to 4, characterized in that the metal is comprised of a valve metal or a valve metal alloy.

6. The object according to one of the claims 1 to 5, characterized in that the metal is comprised of aluminum or titanium or tantalum or zirconium or niobium, or an alloy, including an intermetallic phase, of one or more of these metals.

7. The object according to one of the claims 1 to 6, characterized in that the nucleic acids are desoxyribonucleic acids (DNA) or ribonucleic acids (RNA) or peptide nucleic acids (PNA) or locked nucleic acids (LNA) or mixed molecules thereof.

8. The object according to claim 7, characterized in that the nucleic acids contain additional modifications of the sugar phosphate backbone such as phosphothioates or O-methyl groups and/or unconventional bases such as inosine.

9. The object according to one of the claims 1 to 8, characterized in that the nucleic acids and/or nucleic acid derivatives are present at least partially as individual strands.

10. The object according to claim 9, characterized in that on the individual strands additional nucleic acid strands are bonded by complementary base pairs.

11. The object according to claim 10, characterized in that the strand immobilized on the metal-metal oxide surface and the complementary strand are covalently bonded.

12. The object according to claim 10 or 11, characterized in that active ingredients such as inorganic or organic or biochemical molecules or cell components or tissue components are bonded to the complementary nucleic acid strands.

13. The object according to claim 12, characterized in that inorganic or organic groups that contain radioactive elements are bonded to the complementary nucleic acid strands.

14. A method for manufacturing a metallic object comprising a coating that is comprised of a thin metal oxide layer and nucleic acids and/or nucleic acid derivatives, characterized in that the metallic object is contacted with nucleic acids and/or nucleic acid derivatives that have anionic groups at least at one terminal molecule area so that they are metastably fixed on the metal-metal

oxide layer by regiospecific interactions and that the metallic object simultaneously or subsequently is anodically polarized in an electrolyte solution.

15. The method according to claim 14, characterized in that it is carried out at a pH value and an ion strength at which the anionic groups are negatively charged and the metal-metal oxide surface has at least locally some positive charge centers.

16. The method according to claim 15, characterized in that the pH value is in a range between 3.0 and 5.0.

17. The method according to one of the claims 14 to 16, characterized in that the achieved potential is limited to a value between 2 and 200 V_{SCE} that ensures a sufficiently stable incorporation into the oxide layer but prevents growth of the oxide layer into a recognition area of the nucleic acid required for other processes.

18. A method for immobilizing complementary nucleic acids or nucleic acid derivatives on a nucleic acid-coated object according to one of the claims 1 to 13, characterized in that the pH value and the ion strength are selected such that the metal-metal oxide layer is negatively charged and the nucleic acid backbone is negatively charged or not charged.

19. The method according to claim 18, characterized in that it is carried out with an ion strength in a range of 0.1 to 1.5 mol/liter and a pH value in a range of pH 5.5 to 8.5.

20. The method according to claim 18 or 19, characterized in that active ingredients, such as inorganic or organic or biochemical molecules or cell components or tissue components, are bonded to the complementary

nucleic acid strands.

21. The method according to claim 20, characterized in that inorganic or organic groups that contain radioactive elements are bonded to the complementary nucleic acid strands.

22. Use of an object according to one of the claims 1 to 13 as a material for manufacturing implants for medicine.